

Via Electronic Mail

October 24, 2018



Ms. Anna Krasko
Remediation Project Manager
USEPA – New England Region
OSRR, NH and RI Superfund Section
5 Post Office Square, Suite 100
Mail Code OSRR07-1
Boston, MA 02109-3912

Mr. Paul Kulpa
Senior Environmental Scientist
Rhode Island Department of
Environmental Management
235 Promenade Street
Providence, RI 02908

Re: OU 2 RI/FS Implementation L&RR Superfund Site
North Smithfield, Rhode Island
Reporting Period: July 1, 2018 – September 30, 2018

Dear Ms. Krasko and Mr. Kulpa:

This quarterly progress report is submitted to the U.S. Environmental Protection Agency (USEPA) and Rhode Island Department of Environmental Management (RIDEM) documenting activities completed during the above referenced period for which implementation of the Remedial Investigation/Feasibility Study (RI/FS) for Operable Unit 2 (OU 2) of the L&RR Superfund Site remains on-going. Quarterly progress reports are submitted in accordance with Section IX. 51 to the Administrative Settlement Agreement and Order on Consent (AOC; effective date August 17, 2015).

1.0 Quarterly Work Summary

- Collection of groundwater and surface water samples during the 2018 Pre-ROD Sampling event between July 27 – August 3, 2018. This event included collection of groundwater samples at 11 overburden and bedrock CMT locations, sampling of 10 existing monitoring wells, and samples from 13 surface water locations established during previous wetland and ecological sampling activities to support the SLERA and Refinement. This event included the three additional surface water locations that RIDEM had requested on June 21, 2018.
- Groundwater samples were also collected for Per- and polyfluoroalkyl substances (PFAS) analysis at eight overburden and nine bedrock locations during the 2018 Pre-ROD event (July 27 – August 3, 2018). This second PFAS sampling event also included analysis of a performance evaluation sample (PES) by the contract laboratory (Alpha Analytical) for blind reproducibility of PFAS concentrations at pre-determined levels coordinated by a USEPA laboratory contractor. The PES result was within acceptance limits. Results continue to be validated and will be provided to USEPA and RIDEM once available.
- Completion of the 1,4-dioxane biodegradation treatability study by Sentinel Environmental (Sentinel) in accordance with the six-month projected schedule included in the Revised Treatability Study Work Plan, dated September 26, 2017. Results from the initial test phase were inconclusive regarding biologically-driven processes for 1,4-dioxane destruction. Based on these preliminary results, Woodard & Curran requested that Sentinel perform a series of additional genetic analyses to evaluate the types of microbes and enzymes present in site media.



- Incorporation of review comments to the May 2018 version of the Interim Final SLERA and Refinement and resubmittal on September 7, 2018. This submittal was followed by USEPA's concurrence letter, dated September 14, 2018, which concluded that a baseline ecological risk assessment (BERA) was not required and, more importantly that there were no indicators of ecological risk which would warrant remedial action.
- Collection of the third round of PFAS samples from the network of 17 wells between September 24 – 25, 2018. The sampling network involved collection of samples from locations previously sampled in late July/early August. Results from the three rounds of sampling will be incorporated into the Baseline Human Health Risk Assessment (BHHRA).
- After negotiating access to the proposed location of the northern borehole/well location, drilling activities began on August 20, 2018. Bedrock was encountered at a depth of 43 feet below ground surface (bgs). As drilling continued into rock, a notable water-bearing fracture was encountered at 52-feet which was introducing sand into the borehole that began to complicate the drilling process. A decision was made to grout the borehole and re-advance/grout casing below this feature at a new location. The borehole, referred to as BH18-1 was completed to the target depth of 195 feet bgs, inclusive of the 150-feet of bedrock drilled and as specified by the May 14, 2018 Work Plan.
- In addition to completion of the BH18-1 borehole, three overburden monitoring wells were constructed in support of assessment and monitoring objectives. These wells included: MW-308A (screened 30-35 feet bgs), MW-308B (screened 16-26 feet bgs), and MW-308C (screened 4-11 feet bgs). Groundwater samples were collected for volatile organic compounds (VOCs), 1,4-dioxane, and metals on September 29, 2018.
- Woodard & Curran, along with the geophysical logging contractor, Northeast Geophysical Services (NGS), remobilized to BH18-1 for logging on September 6, 2018. Results from logging identified two potential water-bearing zones from 100-115 feet bgs and 155-170 feet bgs based on concurrent changes in the fluid temperature, fluid conductivity, heat pulse flow meter logs which were corroborated by the caliper, acoustic televiewer (ATV), and optical televiewer (OTV) tools.
- Woodard & Curran worked with NGS to collect groundwater samples from two packer zones between September 12 – 13, 2018. The two zones sampled were between 100-115 and 155-170 feet bgs. Preliminary (unvalidated) results from packer sampling and MW-308 overburden monitoring wells were provided to USEPA and RIDEM on September 25, 2018 along with requests for (i) no further drilling and acceptance of the 195-foot termination depth, (ii) no further drilling to target the 52-foot fracture, and (iii) keeping the borehole "open" without installing a CMT.
- Submittal of a draft, revised RI/FS project schedule to USEPA on September 20, 2018.

2.0 Problems Identified and Response Actions Taken

- As noted above, during advancement of the BH18-1 borehole a high yield fracture was encountered at 52-feet which subsequently kept introducing sand into the borehole that became more difficult to manage as drilling continued. The drilling contractor attempted to telescope casing past the fracture to continue drilling, however the smaller diameter casing became pinned alongside the borehole wall. Because of this sequence of events, the initial BH18-1 was abandoned and steps were taken when drilling resumed to advance casing past the 52-foot fracture to minimize potential issues/delays.



3.0 Out of Scope Work

- None to report during this reporting period.

4.0 Status of USEPA/RIDEM Action Items from Previous Quarterly Report

- None specific to Quarterly Status Report No. 9.

5.0 Data and Results

- Provided USEPA and RIDEM with preliminary (unvalidated) results from samples collected at MW-308A, MW-308B, BH18-1 (100-115), and BH18-1 (155-170) and analyzed for VOCs, 1,4-dioxane, and metals. The uppermost overburden well, MW-308C, was dry at the time of sampling.

6.0 Planned Work for the Next Quarter

- Residential well sampling with a representative from USEPA on October 11, 2018.
- Completion of a horizontal location and elevation survey at the BH18-1 borehole and MW-308 A/B/C wells.
- Collection of a synoptic round of water levels now that the BH18-1 and MW-308 wells have been installed.
- Development of the BH18-1 borehole and collection of samples for VOCs, 1,4-dioxane, metals, and PFAS analysis. PFAS samples will also be collected at the MW-308 wells.
- Management of drilling fluids and soils by returning these media to the ground surface adjacent to the corresponding BH18-1 and MW-308A/B/C locations based on sample results.
- Completion of the genomic analyses as part of on-going 1,4-dioxane treatability studies and receipt of Sentinel's close-out report.

If you have any questions or would like to further discuss these results, please do not hesitate to contact me.

Sincerely,

WOODARD & CURRAN INC.

Alan Benevides, P.E., L.S.P.
Senior Project Manager

AAB/ams

Attachment: Figure 1: Updated Site Plan

PN: 229620.01



Figure 1

Updated Site Plan

L&RR Superfund Site
OU 2 Remedial Investigation
/Feasibility Study

Legend

Existing Hydrogeological Locations

- Bedrock Multi-Level System
- Bedrock Borehole
- ⊕ Geoprobe Groundwater
- ⊕ Monitoring Well
- ⊕ Overburden Multi-Level System
- ⊕ Piezometer
- ⊕ Residential Well
- ⊕ Waterloo Profile
- Proposed Location of New Bedrock Borehole & Associated Monitoring Well
- Roads
- - - Interpolated Parcel Boundaries
- - - Stream Channel

Notes
1. Parcel boundaries interpreted from May 2012 Existing Site Plan (Drawing C-01) and the Town of North Smithfield (November 2013) and may not reflect on-the-ground accuracy.
2. Data displayed in NAD83 RI State Plane and NAVD88
3. Orthophotography from USGS, April 2014.

1 inch = 300 feet
0 150 300 Feet



Project #: 229620
Map Created: July 2018

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk. Data Sources: USGS, City of North Smithfield, RI